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ABSTRACT

This report is one in a series on special education expenditures and focuses on total expenditures for students with disabilities in the 1999-2000 school year, including spending variations by disability. Highlights reported include: (1) per pupil expenditures vary by disability category, ranging from 1.6 times that of regular education students for students with specific learning disabilities to 3.6 times for students with multiple disabilities; (2) per pupil education expenditures for students who receive special education services average 1.91 times greater than expenditures for students who receive no special education services; (3) expenditures are highest for students with disabilities placed in non-public schools or other public agencies; and (4) highest-incidence disability categories (learning disabilities and speech/language impairments) exhibit the lowest levels of per pupil spending. Following an introduction, section 2 shows how the total expenditure to educate a school-aged student with a disability varies depending on the type of disability. Section 3 focuses on instructional and related service expenditures and how they vary by disability category and is followed by a concluding section. Five appendices and eight exhibits provide additional detail on methodology or findings. (DB)

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SEEP

Special Education Expenditure Project

Center for Special Education Finance
CSEF

Total Expenditures for Students with Disabilities, 1999-2000: Spending Variation by Disability

Report #5
June 2003

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SEEP Reports

This document is a part of a series of reports based on information derived from the Special Education Expenditure Project (SEEP), a national study conducted by the American Institutes for Research (AIR) for the U.S. Department of Education, Office of Special Education Programs (OSEP). SEEP is being conducted by AIR under the auspices of the Center for Special Education Finance (CSEF). It is the fourth project sponsored by the U.S. Department of Education and its predecessor, the Department of Health, Education and Welfare, in the past 40 years to examine the nation's spending on special education and related services. See Kakalik, Furry, and Carney (1981), Moore, Strang, Schwartz, and Braddock (1988), and Rossmiller, Hale, and Frohreich (1970).

The SEEP reports are based on analyses of extensive data for the 1999-2000 school year. The SEEP includes 23 different surveys to collect data at the state, district, and school levels. Survey respondents included state directors of special education, district directors of special education, district directors of transportation services, school principals, special education teachers and related service providers, regular education teachers, and special education aides. Survey responses were combined with other requested documents and data sets from states, schools, and districts to create databases that represented a sample of approximately 10,000 students with disabilities, more than 5,000 special education teachers and related service providers, approximately 5,000 regular education teachers, more than 1,000 schools, and well over 300 local education agencies.

The series of SEEP reports will provide descriptive information on the following issues:

- What are we spending on special education services for students with disabilities in the U.S.?
- How does special education spending vary across types of public school districts?
- What are we spending on due process for students with disabilities?
- What are we spending on transportation services for students with disabilities?
- How does education spending vary for students by disability and what factors explain differences in spending by disability?
- What role do functional abilities play in explaining spending variations for students with disabilities?
- What are we spending on preschool programs for students with disabilities?
- Who are the teachers and related service providers who serve students with disabilities?
- How are special education teaching assistants used to serve students with disabilities?
- What are we spending on special education services in different types of schools?
- How does special education spending vary across states classified by funding formula, student poverty, special education enrollment levels, and income levels?

One of the SEEP reports will be devoted to describing the purpose and design of the study.

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Abbreviations

SLD	Specific Learning Disability
SLI	Speech/Language Impairment
ED	Emotional Disturbance
OI	Orthopedic Impairment
MR	Mental Retardation
HI/D	Hearing Impairment/Deafness
TBI	Traumatic Brain Injury
AUT	Autism
VI/B	Visual Impairment/Blindness
MD	Multiple Disabilities
OHI	Other Health Impairments
PRE	Preschool Students
NPS	Students placed in non-public schools or other public agencies paid for by the public school district

Highlights

- **Per pupil education expenditures vary by disability category.** The per pupil expenditures range from a low of $10,558 for students with specific learning disabilities to a high of $20,095 for students with multiple disabilities. Expenditures for students with specific learning disabilities are 1.6 times the expenditure for a regular education student, whereas expenditures for students with multiple disabilities are 3.1 times higher.

- **Per pupil education expenditures for students who receive special education services (excluding homebound students) are 1.91 times greater than expenditures for students who receive no special education services.** The average expenditure per pupil for students with disabilities (excluding homebound students) was $12,525 compared with $6,556 for the typical regular education student who receives no special education services. The average spending ratio for this group of special education students is 1.91 (=$12,525/$6,556).

- **Expenditures are highest for students with disabilities placed in non-public schools or other public agencies.** The average expenditure on tuition, fees, and other special services for students placed in non-public schools or other public agencies is $25,580—twice the expenditure for the average special education student and 3.9 times the expenditure for regular education students.

- **Highest-incidence disability categories exhibit the lowest levels of per pupil spending.** Students with the two most common disabilities, specific learning disabilities and speech/language impairments, make up 46 percent and 17 percent of the students who receive special education services, respectively. Per pupil spending on these two categories are $10,558 for specific learning disabled and $10,958 for speech/language impaired.

I. Introduction

The first report in this series (Chambers, Parrish, and Harr, 2002) presented information derived from the Special Education Expenditure Project (SEEP) on the total expenditures used to educate students found eligible for special education services. Terms like a *typical* or *average* special education student were used to refer to students with disabilities who received special education services. However, special education students represent a diverse set of children with widely varying needs for certain instructional and related services.

This report explores the variations in education expenditures used for students with various disabilities, and addresses the following questions: How do education expenditures on students eligible for special education services vary by disability category? What information does a student's disability provide about the student's need for instructional or related services?

Under the Individuals with Disabilities Education Act (IDEA), children served in a special education program are classified into one of 13 primary disability categories. These 13 categories include mental, physical, social, or behavioral impairments, and disabilities that impact the child's ability to learn or function in school. Four of the 13 categories (i.e., specific learning disability, speech/language impairment, mental retardation, and emotional disturbance) account for well over 80 percent of school-aged special education students. These are referred to as "high-incidence" disabilities since they represent the largest percentages of the special education population. The remaining categories are "low-incidence" disabilities.

The data for this study come primarily from SEEP questionnaires filled out by special education teachers and related service providers about their special education students.[1] All special education service providers in the selected schools were asked to fill out questionnaires for two students, and instructions were provided to ensure random sampling.[2] In addition, the special education director in each sample district was asked to provide information on three randomly selected students who were served by non-public schools or other public agencies outside the school district.

Instructions for selection of the students sampled were designed to enhance the likelihood of including students with low-incidence disabilities or less common disability categories. If the class or caseload of a teacher or related service provider included one or two students with low-incidence disabilities, these students were automatically selected for the sample. If there were more than two such students in the class or caseload, two of them were randomly selected using specific procedures provided in the survey materials. If there were no students with low-incidence disabilities, respondents used the procedures to select a random sample of two students with high-incidence disabilities. However, all

[1] See Appendix A for a description of the sample.

[2] The sample selection procedures were designed to ensure that the service provider most knowledgeable about the student was asked to complete the student questionnaire.

sample weights were adjusted so that the numbers presented in this report are intended to be nationally representative.

This report presents a detailed picture of expenditures on school-aged special education students obtained from SEEP data. All data reported are for the 1999–2000 school year. Section II shows how the total expenditure to educate a school-aged student with a disability varies depending on the type of disability.[3] Section III focuses on instructional and related service expenditures (which make up over half of the total education expenditures), and how they vary by disability category. Conclusions are presented in Section IV. This report and other SEEP reports use the phrase "student with a disability" to refer to a student receiving special education services, as determined by the student's Individual Education Program (IEP), under the IDEA.

Subsequent SEEP reports will explore the variations in expenditure within disability categories and will also examine other characteristics of children that impact needs and ultimately expenditures on services.

[3] Although data on preschool and non-public school students are presented in Exhibit 1, the analysis following Exhibit 1 includes only school-aged special education students in public schools.

II. Per Pupil Expenditures by Disability

Exhibit 1 shows the average per pupil spending (and the 95 percent confidence intervals around the average spending estimates) on school-aged special education students served within public schools, disaggregated into 11 of the 13 IDEA disability categories. Two additional categories—preschool students in public schools (PRE) and students placed in non-public schools and other public agencies (NPS)[4]— are shown separately, as the sample sizes were too small to be broken into disability categories. The non-public schools category (NPS) includes both school-aged and preschool students who are served outside the public schools. Thus, the analysis of expenditures by disability predominantly reflects differences observed for school-aged students served within public schools operated by local school districts, intermediate education units, or state special education schools.

Two of the 13 disability categories are not included in the exhibits in this report: namely, school-aged children who are deaf-blind and school-aged children classified with a developmental delay. Expenditure estimates for students with deaf-blindness are not shown due to insufficient sample size.[5]

School-aged children classified with a developmental delay included only a small sample of children (i.e., less than 45). However, this category was only used in 21 states and, there is wide variation in the numbers and proportions of school-aged children classified as developmentally delayed across the states. Because of the apparent lack of consistency of use of this category combined with the small sample, the estimates for this population of children are omitted in this report.

The expenditures presented in Exhibit 1 include spending on all *regular and special education services* used to educate students with disabilities in each of the categories designated on the horizontal axis.[6] Specifically, these expenditures on special education students include personnel and non-personnel expenditures on regular education instruction, special education instruction and related services, regular school and district administration and support, special education program administration and support, regular and special transportation services, and school facilities.[7]

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[4] See Appendix B1 for descriptive statistics including spending ratios, per pupil expenditures, standard errors, estimated population represented, and sample size, by disability category.

[5] Minimum sample size for reporting numbers for the SEEP is 30 students. Estimates for samples smaller than 30 students are suppressed.

[6] While some special education students receive services from other special needs programs such as Title I, GATE, or programs for English language learners, these expenditures are excluded from the present analysis for simplicity. The overall average expenditure on these other special needs programs amounted to about $165 per pupil.

[7] Average expenditure estimates for specialized equipment (which are included as a non-personnel expenditure) are not unique to the student level and therefore may not reflect the actual expenditures for the different disability types. It is expected that the estimates for disability categories with high special equipment needs are understated, and estimates for disability categories that have fewer needs for specialized equipment are overstated.

On average, for the 1999–2000 school year, the expenditure to educate a student without disabilities or other special needs is $6,556. The average per pupil expenditure on regular and special education services for special education students is $12,525, or 91 percent more than the amount being spent on the typical regular education student.[8]

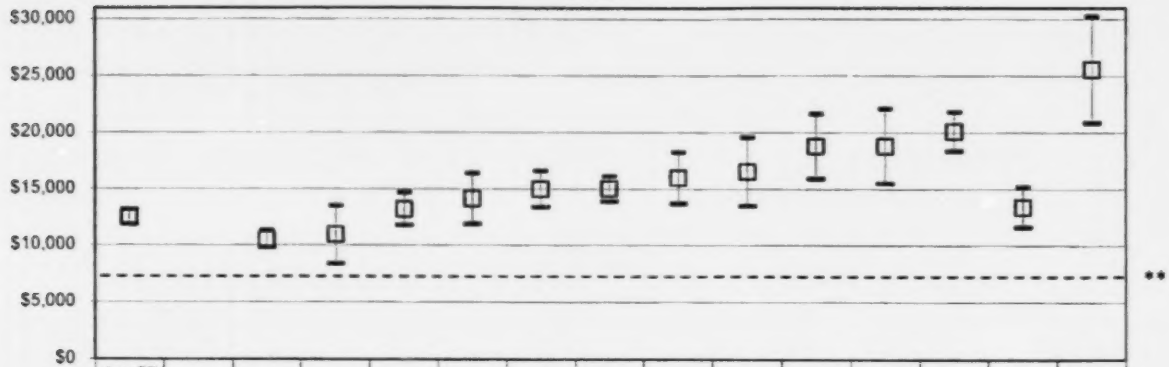
As seen in Exhibit 1, average expenditures vary by disability category. Disability categories are listed in order from lowest average to highest average per pupil expenditure with the exception of the overall average, which is shown at the far left of the exhibit. The least expensive disability category is specific learning disability (SLD), with an average yearly expenditure of $10,558 per pupil. The average expenditure on students with specific learning disabilities is just over half the per pupil expenditure on students with multiple disabilities (MD), the most expensive disability category, with an average of $20,095 per pupil. The average expenditure for students with disabilities placed in non-public schools or other public agencies (NPS), $25,580, is almost four times the average expenditure for a regular education student.

Another way to show differences in spending by disability category is the spending ratio. The spending ratio compares the average expenditure for each disability category with the average expenditure for a regular education student ($6,556). The spending ratio for each disability category appears in parentheses below each category label in Exhibit 1. Using the estimate of the average spending for a regular education student of $6,556 per year, the education expenditure for a student with a disability can range from 1.6 (SLD) to 3.1 (MD) to 3.9 (NPS) times the average expenditure for a regular education student.

As mentioned in the previous section, four of the 13 disability categories make up the vast majority of the population of students with disabilities. The two most common disabilities, specific learning disability (SLD) and speech/language impairment (SLI), make up over 60 percent of the population (which includes preschool students and students placed in non-public schools). These are also the two disabilities with the lowest per pupil expenditures, at $10,558 and $10,958, respectively.

[8] This per pupil expenditure ($12,525) differs from the one reported in the first report of this series ($12,474) (Chambers et al., 2002) because this report excludes homebound and hospitalized students. Data for homebound and hospitalized students are collected only at the aggregate level (by district), whereas data for all other students are collected at the individual student level. This report looks at instructional and related services, and therefore requires individual-level data. Homebound and hospitalized students account for only 0.6 percent of all special education students.

Exhibit 1.
Per Pupil Expenditures by Disability, with 95 Percent Confidence Intervals,*
1999-2000



	Avg SE Student (1.9)***		SLD (1.6)	SLI (1.7)	OHI (2.0)	ED (2.2)	OI (2.3)	MR (2.3)	HI/D (2.4)	TBI (2.5)	AUT (2.9)	VI/B (2.9)	MD (3.1)	PRE (2.0)	NPS (3.9)
—Upper bound	$13,193		$11,309	$13,528	$14,677	$16,389	$16,588	$16,128	$18,281	$19,562	$21,671	$22,108	$21,826	$15,206	$30,264
□ Average	$12,525		$10,558	$10,958	$13,229	$14,147	$14,993	$15,040	$15,992	$16,542	$18,790	$18,811	$20,095	$13,426	$25,580
—Lower bound	$11,857		$9,807	$8,388	$11,781	$11,905	$13,398	$13,952	$13,703	$13,522	$15,909	$15,514	$18,364	$11,646	$20,896

*The vertical bars represent 95 percent confidence intervals for the estimates.
** The dashed line (- - -) indicates average per pupil spending for a regular education student, $6,556
*** The figures in parentheses represent the spending ratio, which compares the average expenditure for each disability category with the average expenditure for a regular education student ($6,556).

Exhibit 1 reads: The average expenditure to educate a student with a specific learning disability is $10,558. The confidence interval for expenditures on students with this disability is quite narrow.

Exhibit 1 also includes 95 percent confidence intervals around the per pupil expenditure estimates.[9] The estimate for expenditures on students with learning disabilities has a narrow confidence interval, whereas the confidence interval for expenditures on students with visual impairments/blindness is relatively wide. Estimates for expenditures on students with visual impairments/blindness are not statistically significantly different from expenditures on students with hearing impairments/deafness, traumatic brain injury, autism, or multiple disabilities. For statistical significance on comparisons of per pupil expenditure between any two categories, see Appendix B2.

The large confidence intervals around some of these expenditure estimates suggests there is a wide range of needs represented within some of these disability categories. Two students with the same disability may have very different expenditures because they have different needs and therefore receive different services.

[9] The 95 percent confidence intervals are calculated by adding to, or subtracting from, the mean the standard error multiplied by 1.96. The higher the sample size and the lower the standard error, the narrower the confidence interval will be. A lower confidence interval indicates a more precise estimate. Means and standard errors can be found in Appendix B1.

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III. Per Pupil Expenditures for Instructional and Related Services by Disability

In order to understand the differences in per pupil spending by disability category, it is necessary first to understand the elements of per pupil spending. The combination of regular and special education instructional and related services account for the vast majority (over 60 percent) of school spending on students with disabilities, and school personnel accounts for the largest element of spending on instructional services.[10] All of the remaining analyses of variations in spending by disability focus *only* on the *instructional and related services* received by special education students, since these are the expenditures that will vary by disability.[11]

Moreover, the remainder of these analyses of spending by disability will be limited to school-aged children and will include only those special education students served in the public schools. Special education students served in non-public schools or other public agencies are excluded from this analysis because SEEP was able to collect information on tuition paid but no detail on the specific instructional and related services the students receive. Moreover, the samples of students served in non-public schools and other public agencies by disability are too small in most instances to report with any degree of precision.

Each student may receive several of these services and can receive more than one service simultaneously. Expenditures were calculated for each student for each of the services listed below.[12] The instructional and related services presented in these analyses include the categories listed below.

- **Regular education classes** include expenditures for time spent by these students in a regular classroom with a regular classroom teacher and/or regular teaching assistants. If a student receives special education services inside the regular education classroom, for example services from a resource specialist, these additional services will be counted under the resource specialist category.

- **Special education classes** include expenditures for time spent by these students in classes designed specifically for students with disabilities and are taught by special education teachers who are often supported by special education aides.

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[10] The remaining 40 percent of expenditures are those for school and district administration for the regular and special education program. Much of the variation in these components may be traced to differences in district size and other factors that are not related to the disability of the child. The purpose of this report is to focus on the variations in expenditure that can be traced to disability category in the SEEP data.

[11] Exhibit 1 shows the total education expenditures per pupil, and includes all of the resources and services mentioned above in Section II.

[12] These services are different from the educational placements defined by the Office of Special Education Programs (OSEP), U.S. Department of Education, which classify students into a single educational environment.

Such classes are often designed to replace many of the services that would have otherwise been received in the regular classroom.

- **Resource specialists** include expenditures for time spent receiving services from special education teachers who either pull students with disabilities out of regular education classrooms or who go into regular education classrooms to provide specialized services for students with disabilities such as supplemental instruction in reading or mathematics. These services are designed to provide additional resources to these areas of instruction over and above what is received by students with disabilities in the regular classroom. Services from a resource specialist can occur in a separate resource room (pull-out), in the student's regular education classroom, or in the student's self-contained special classroom.

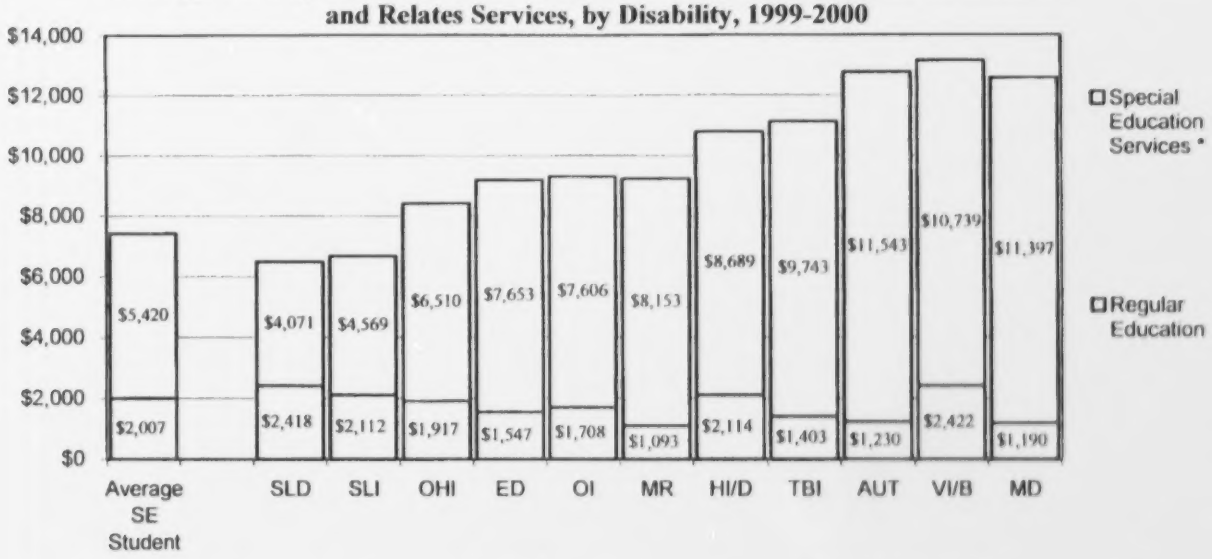
- **Related services** include expenditures for time spent receiving services from speech/language specialists, physical/occupational therapists, vision specialists, audiologists, psychologists, social workers, personal health aides, and other related service providers. Related services can be provided by personnel during or after the school day as a part of the student's IEP.

- **Other special education services** include expenditures for time spent receiving community-based services,[13] extended time services (e.g., before or after school or on weekends), or summer school services.

Exhibit 2 shows per pupil expenditures for regular and special education instructional and related services on students who are eligible for special education. Most of these students spend some time in regular education classrooms. The bottom portion of each bar in Exhibit 2 depicts expenditures for regular education classroom services. Regular education class expenditures range from a low of $1,093 for students with mental retardation (MR) to $2,422 for students with visual impairment/blindness (VI/B). Students with specific learning disabilities (SLD), hearing impairment/deafness (HI/D), and speech/language impairments (SLI) also have relatively high expenditures on regular classroom services. Presumably, these are the students who spend the most time in regular education classrooms. The top portion of the bars represents spending on special education instructional and related services. Special education expenditures are highest for the same types of students who have the highest total expenditures (i.e., students with autism (AUT), visual impairment/blindness (VI/B), and multiple disabilities (MD)). More detailed information on the samples of students receiving various services can be found in Appendix C.

[13] Community-based training services exclude vocational classes that are part of the vocational departmentalized secondary courses included under regular education classes.

Exhibit 2.
Average Per Pupil Expenditures for Regular and Special Education Instructional and Relates Services, by Disability, 1999-2000



* Special education services include: special education classes, resource specialists, related services, community-based training, extended time services, and summer school.

Exhibit 2 reads: On average, students with visual impairment/ blindness have relatively high expenditures for regular education classroom services ($2,422) and for special education services ($10,739).

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Exhibit 3 reports the data in Exhibit 2 in an alternative way by showing how total expenditures are divided between regular and special education instruction and related services as a percentage of the total. With the disability categories again displayed in order from lowest to highest total expenditure, Exhibit 3 shows that the disability categories associated with the highest total spending (i.e., generally, the lower incidence categories) tend to spend relatively more on special relative to regular education services, and vice versa.

Exhibit 3. The Division between Regular and Special Education Expenditures as a Percentage of the Total Expenditure on Instructional and Related Services for Special Education Students, 1999-2000

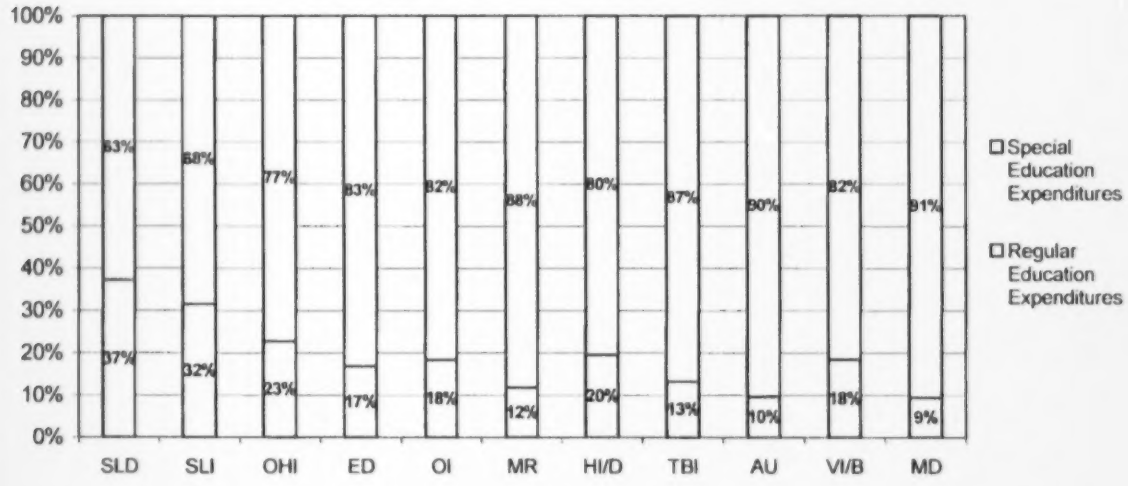

Exhibit 3 reads: Over ninety percent of the total expenditure on students with multiple disabilities (MD) is attributable to special education services, and this is the most expensive category to educate. For the least expensive category, specific learning disability (SLD), 63 percent of the total expenditure is attributable to special education services.

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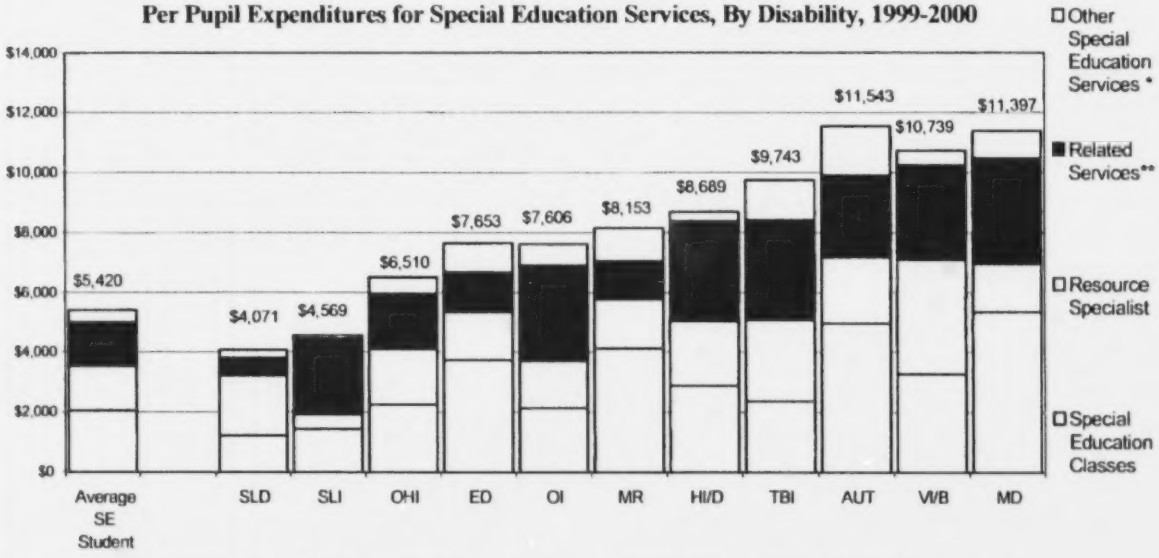
Exhibit 4 shows a more detailed breakdown of the special education services estimates shown in top portion of the bar displayed in Exhibit 2. As in Exhibit 2, the dollar value estimates take into account the total population of special education students in each disability category. In other words, these per pupil expenditures represent the total spending on each type of instructional or related service divided by the total number of students in the disability category. Thus, the average expenditures on a particular instructional or related service reflect the fact that some students may not have received that service.[14]

Exhibit 4.

Per Pupil Expenditures for Special Education Services, By Disability, 1999-2000



* Other special education services include: community-based training, extended time services, and summer school.

** Related services include: school psychologists, social workers, school nurses, speech/language specialists, physical/occupational therapists, audiologists, vision specialists, other therapists, and personal health aides.

Exhibit 4 reads: Students with autism (AUT) have the highest per pupil expenditures for special services ($11,543), and more of these expenditures are spent on special education classes than any of the three other types of expenditures.

[14] For example, the estimated per pupil expenditure for the services of resource specialists for all students with speech language impairment is $497 per year. This number seems low because it reflects the fact that not all the students with speech and language impairment receive services from resource specialists. If we only considered the students with speech/ language impairments who actually receive services from resource specialists, the average expenditure would be $1,847. Since this report explores variations among disability categories, it would be misleading to show the average dollars spent for only those students who receive the services, since a small percentage of students in a category who receive an expensive service would not help to explain the variation by disability category.

Exhibit 5 presents the data in Exhibit 4 in an alternative way by showing how total expenditures on special education are divided among the major categories of special education services. With the disability categories again displayed in order from lowest to highest total expenditure, Exhibit 5 shows a less systematic pattern than Exhibit 3 of the trade-offs between these various categories of special education services. With the exception of speech/language impairments, it can be seen that most of the special education expenditures are accounted for by expenditures on special class and resource specialist services. Combined, these two components of instructional services range from a low of 42 percent (speech/language impairments) to a high of about 80 percent (specific learning disability) of total special education expenditures. The variations in expenditures on specific special education services between these two disability categories, which have very similar *total* special education expenditures, are striking.

Other variations are evident which do not seem to be related to the progression from low to high total expenditure, nor to low and high incidence disability categories. Special class services tend to play a proportionately larger role in expenditures for students classified with emotional disturbance and mental retardation, which are two high-incidence, lower spending disability categories. However, this is also true for students with autism and multiple disabilities, the two low-incidence, higher spending disability categories. Resource services tended to play a proportionately larger role in accounting for expenditures on students classified with a specific learning disability, visual impairment/blindness, traumatic brain injury, and other health impairment. Expenditures on related services play a relatively larger role for students with speech/language impairment or orthopedic impairment. Expenditures on other special education services such as community-based, extended time, and summer school services were most prominent for students with autism, emotional disturbance, and mental retardation.

Exhibit 5. Composition of Special Education Instructional and Related Service Expenditures by Disability Category. 1999-2000

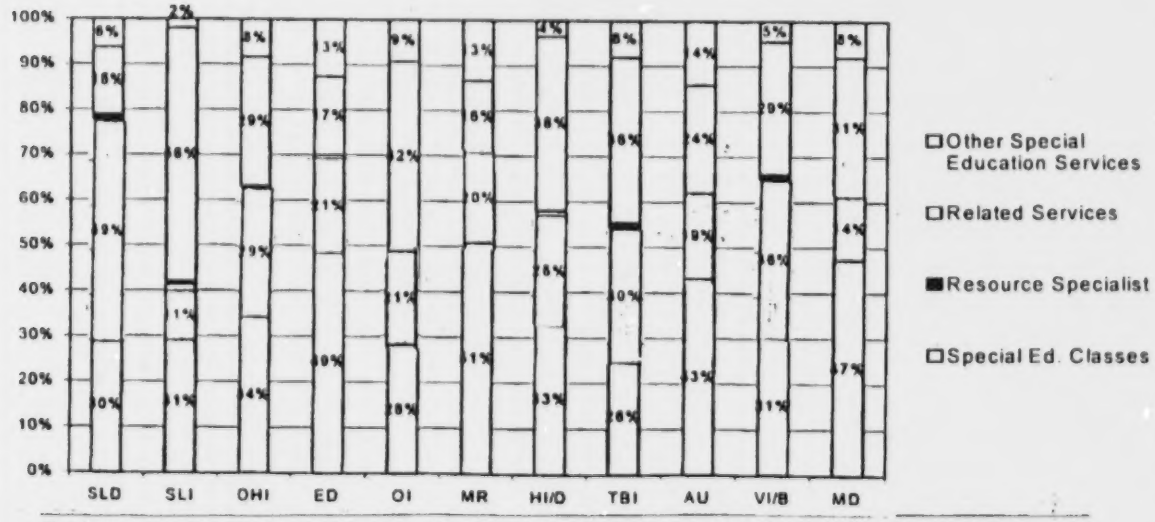


Exhibit 3 reads: For the least expensive disability category, specific learning disability (SLD), 49 percent of the special education expenditure is attributable to resource specialist services.

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Exhibit 6 shows the detail behind the regular and special education expenditures shown in Exhibit 4, as well as the standard errors for each of the estimates. The special education expenditures are comprised of six components including: special education classes, resource specialists, related services, and other related services (community-based training, extended time services, and summer school).

Exhibit 6.
Means and Standard Errors for
Per Pupil Expenditures for Regular and Special Education Instructional and Related Services, by Disability, 1999-2000

	Regular		Special											
	Regular Ed. Classes		Special Ed. Classes		Resource Specialist		Related Services		Community-Based Training		Extended Time Service		Summer School	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Avg SE Student	**$2,007**	**($207)**	**$2,041**	**($150)**	**$1,500**	**($146)**	**$1,463**	**($387)**	**$133**	**($526)**	**$145**	**($1,751)**	**$138**	**($66)**
SLD	$2,418	($306)	$1,209	($168)	$2,006	($143)	$602	($403)	$56	($1,476)	$103	($1,423)	$95	($110)
SLI	$2,112	($459)	$1,426	($319)	$497	($273)	$2,551	($1,392)	*	*	$32	($1,002)	$62	($137)
OHI	$1,917	($161)	$2,237	($499)	$1,871	($255)	$1,857	($596)	$117	($1,581)	$257	($828)	$171	($112)
ED	$1,547	($317)	$3,739	($341)	$1,616	($287)	$1,331	($704)	$100	($512)	$756	($5,878)	$111	($97)
OI	$1,708	($448)	$2,122	($383)	$1,594	($344)	$3,190	($505)	$166	($1,977)	$310	($4,314)	$224	($108)
MR	$1,093	($304)	$4,130	($373)	$1,642	($773)	$1,291	($294)	$805	($661)	$56	($818)	$229	($51)
HI/D	$2,114	($264)	$2,876	($1,604)	$2,171	($369)	$3,335	($873)	$49	($1,418)	$49	($669)	$209	($75)
TBI	$1,403	($309)	$2,347	($490)	$2,739	($873)	$3,342	($1,532)	$486	($2,508)	*	*	$257	($132)
AU	$1,230	($273)	$4,966	($456)	$2,208	($1,885)	$2,734	($460)	$584	($1,375)	$490	($3,209)	$561	($63)
VI/B	$2,422	($497)	$3,285	($1,611)	$3,824	($1,232)	$3,141	($1,093)	$257	($268)	$47	($507)	$185	($173)
MD	$1,190	($372)	$5,362	($359)	$1,600	($600)	$3,515	($674)	$371	($484)	$143	($630)	$406	($106)

* Values omitted due to insufficient sample size. OSEP guidelines require 10 unweighted cases per cell.

Exhibit 6 reads: The average expenditure on regular education classes is $2,418 for students with specific learning disabilities (SLD), and the standard error is $306.

Exhibit 7 disaggregates the related services shown in Exhibits 4 and 5 into their component parts. The two main types of related services are those provided by speech/language specialists and physical/occupational therapists. The *other related services*, which are combined in Exhibit 4 and 5, include services from school psychologists, social workers, school nurses, audiologists, vision specialists, other therapists, and personal health aides.

Overall, expenditures on related services are highest for students with multiple disabilities (MD), who also have the highest total expenditures, and lowest for students with specific learning disabilities (SLD), who also have the lowest total expenditures. In between, however, the pattern of increasing per pupil expenditures is not consistent with this ordering of disabilities. The order in Exhibit 7 follows Exhibit 1, in which disabilities are ranked from lowest to highest according to their total expenditures.

It is interesting to note that the two categories that are least expensive to serve—students with specific learning disabilities (SLD) and students with speech/language impairments (SLI)—are similar in total expenditures, regular expenditures, and special expenditures. However, they are very different in their expenditures on related services. Expenditures for students with specific learning disabilities are only $602, well below the average of $1,463. Expenditures are well above average for students with speech language impairments, $2,551, almost equally split between speech/language therapists and physical/occupational therapists. Looking back to Exhibit 5, the tradeoff seems to be that more is spent on resource specialists for students with specific learning disabilities.

Students with speech/language impairments do not have the highest expenditures on speech/language therapists, however. Two other categories have higher expenditures: students with autism (AUT) and hearing impairment/deafness (HI/D).

Exhibit 7.
Per Pupil Expenditures for Related Services:
Speech/Language Specialist, Physical/Occupational Therapist, and Other Related Services, 1999-2000

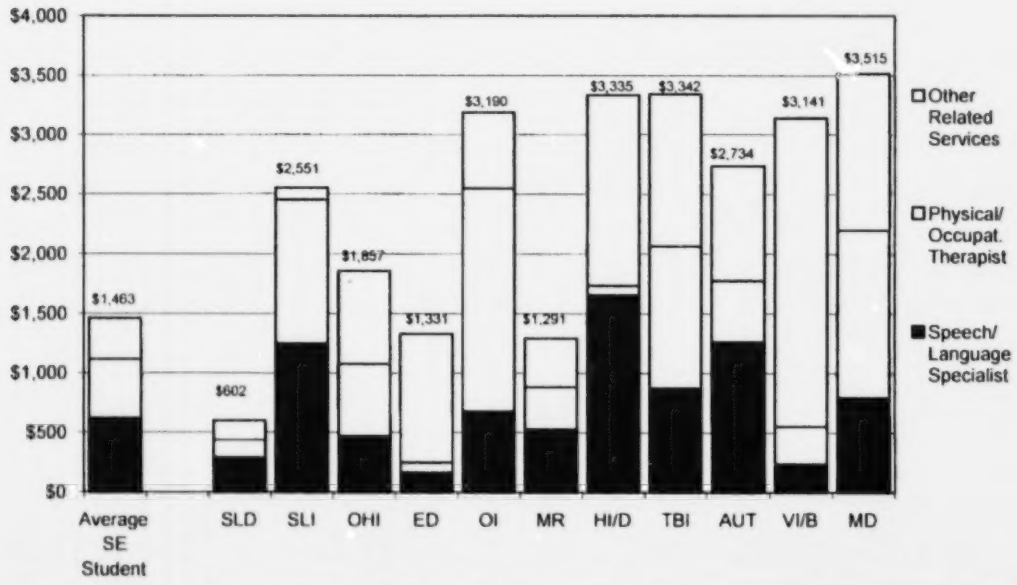

Exhibit 7 reads: Expenditures for related services for students with specific learning disabilities (SLD) are much lower ($602) than the $2,551 spent on students with speech/language impairments (SLI).

Exhibit 8 provides the detailed data for the bar chart in Exhibit 7, as well as standard errors for each category.

Exhibit 8.
Means and Standard Errors for Expenditures for Related Services: Speech/Language Specialist, Physical/Occupational Therapist, and Other Related Services, 1999-2000

	Speech/Language Specialist		Physical/Occupational Therapist		Other Related Services*	
	Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
Average SE Student	**$622**	**($60)**	**$498**	**($1,200)**	**$343**	**($267)**
SLD	$290	($213)	$151	($1,243)	$161	($215)
SLI	$1,250	($140)	$1,205	($6,145)	$96	($183)
OHI	$470	($304)	$609	($605)	$778	($851)
ED	$166	($210)	$84	($911)	$1,081	($834)
OI	$682	($388)	$1,866	($546)	$642	($342)
MR	$531	($131)	$354	($239)	$406	($334)
HI/D	$1,654	($995)	$80	($192)	$1,601	($770)
TBI	$875	($549)	$1,188	($1,184)	$1,279	($1,669)
AUT	$1,263	($271)	$513	($208)	$958	($652)
VI/B	$239	($355)	$311	($565)	$2,591	($1,137)
MD	$802	($142)	$1,398	($387)	$1,315	($807)

*Other related services include: school psychologists, social workers, school nurses, audiologists, vision specialists, other therapists, and personal health aides.

Exhibit 8 reads: The average expenditure on speech/language specialists for students with speech/language impairments (SLI) is $1,250 with a standard error of $140.

IV. Conclusions

During the 1999–2000 school year, the expenditure to educate a student with a disability varies across disability categories. The least expensive category, specific learning disability, has an average annual expenditure of $10,558 per pupil. This is about half of the expenditure for students with multiple disabilities, the most expensive disability category in public schools, with an average of $20,095 per year. Expenditures are highest for students with disabilities placed in non-public schools or other public agencies. Their average expenditure on tuition, fees, and other special services is $25,580.

A comparison of expenditures to educate school-aged special education students with expenditures on regular education students (who receive no special education services) in public schools shows that the per pupil expenditure for a student with a disability ranges between 1.6 (specific learning disabilities) and 3.1 (multiple disabilities) times the expenditure for a regular education student. The per pupil expenditure for students with disabilities placed in non-public schools or other public agencies is 3.9 times the expenditure for a regular education student.

The highest-incidence disability categories are the lowest in per pupil spending. Students with the two most common disabilities, specific learning disabilities and speech/language impairments, make up 46 percent and 17 percent of the students who receive special education services, respectively. Per pupil spending on these two categories are $10,558 for specific learning disability, as mentioned above, and $10,958 for speech/language impairment.

While the division between special and regular education appears somewhat systematic in explaining the variations in total expenditure, the division of special education spending among various types of services does not show a systematic pattern that helps explain the variations in spending across disability categories ordered from the lowest to highest total spending. Some students have higher expenditures on special education classes, while others have higher expenditures on resource programs. Similar inconsistency is observed for related services. In short, it appears that each disability category has a unique configuration of special education expenditures.

Subsequent SEEP reports will also examine how understanding individual student needs may help to explain variations in education expenditures for students with disabilities better than their disability category alone.

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Appendix A1
SEEP Samples

The SEEP surveys were sent to a stratified random sample of districts and schools (see "SEEP Reports") that included representatives from the 50 states and the District of Columbia. Samples of districts were selected within each of the states (a minimum of two districts in each state, except for in Hawaii and the District of Columbia, which have only one school district each). More districts were included from larger states. Intermediate education units (IEUs) were selected from IEUs serving the districts included in the sample. IEUs were surveyed only if they received funds directly from the state for serving their students and essentially operated independently of the school districts in the region they serve.

Samples of elementary, secondary, and special education schools were selected from the sampled districts and IEUs (where appropriate). In addition, state special education schools were also sampled.

Expanded samples of districts, IEUs, and schools were selected through a series of nine separate contracts with individual states.[15] These states provided additional support for data collection and these expanded samples are included in the analyses presented in these reports.

Data were collected from all special education teachers and related service providers assigned to schools in the sample. In addition, samples of regular education teachers and special education teacher aides were selected from the staff in these schools.

Finally, the special education teachers and related service providers were each asked to select a sample of two students with disabilities from the rosters of students they serve. To prevent the possibility of a student being selected multiple times, the research team developed sample selection procedures so that students were only selected from the most restrictive placement possible for any given student. The sample selection procedures were designed to ensure that the service provider most knowledgeable about any student completed the survey about the student.

The student sample on which many of the analyses are based comes from 1,053 of the 1,767 schools included in our original sample (representing 45 states and the District of Columbia). This sample includes 330 regular local educational agencies, 14 IEUs, and 7 state special education schools. Analysis of the patterns of response suggests that the samples on which these estimates are based do not appear to exhibit any response bias.

[15]The nine states include Alabama, Delaware, Indiana, Kansas, Missouri, New Jersey, New York, Ohio, and Rhode Island.

Appendix A2
SEEP Population and Sample Proportions, by Disability

Looking at the proportions of students by disability category, one can see that the percentage of students in the sample does not match the percentage of students in the population. For example, Exhibit A2.1, below, shows that students with speech and language impairments represent 17.5 percent of the population but only 5.6 percent of the sample, whereas students with mental retardation are a smaller percentage of the population (9.2 percent) and represent a larger percentage of the sample (11.0 percent). See Appendix B1 for the numbers of students in the population and in the sample for each disability category.

Our sampling procedures were designed both to guarantee that the most knowledgeable service provider filled out the student's questionnaire and to obtain an adequate number of observations from low-incidence disability categories to produce estimates. It was not our intent to estimate prevalence, as those estimates can be obtained elsewhere. If this had been our objective, we would have selected a sample based on lists of students across districts or schools rather than from the class rosters from special education teachers and related service providers.

Service providers were given instructions on how to select two students for whom they would fill out the questionnaires. Service providers made lists of the students they served (for special class teachers, this meant the class roster; for others it meant the entire caseload). To ensure that no student was on more than one list, resource teacher/specialists had to cross any student off their lists who was served by a special education teacher, and related service providers had to cross off any student who was served by either of the other types of providers. They then each divided their lists into low-incidence (rare) disabilities and high-incidence (more common) disabilities. To ensure enough students in the sample with low-incidence disabilities, they first chose up to two students randomly from that list. If there were no low-incidence students or there was only one low-incidence student, they randomly chose high-incidence disability students to bring the total to two.

The following calculations show that our sampling instructions made it unlikely that the sample proportions would match the population proportions. The top half of the table below shows the numbers and percentages of students in the sample, and the population of students who receive special education services, for students in each of four disability categories (speech language impairment (SLI), mental retardation (MR), hearing impairment (HI), and autism (AUT)). Exhibit A2.2 depicts the percentage of students who receive services from the three types of service providers: special education teacher, resource specialist/teacher, and related service provider.

Exhibit A2.1. Sample and Population Percentages, by Disability

	High Incidence		Low Incidence	
	SLI	MR	HI/D	AUT
Number in population	1,076,182	565,281	59,240	55,042
Percent of population	17.5%	9.2%	1.0%	0.9%
Number in sample	560	1,097	355	638
Percent of sample	5.6%	11.0%	3.6%	6.4%

Exhibit A2.2. Percent of Students Served by Different Types of Service Providers

	High Incidence		Low Incidence	
Percent of students served by:	SLI	MR	HI/D	AUT
Special education teacher	40%	80%	48%	76%
Resource specialist/ teacher	27%	37%	54%	33%
Related service provider	78%	45%	77%	72%

The SEEP sample of special education service providers who filled out the student questionnaires has 2,345 special education teachers, 1,465 resource specialist/teachers, and 1,013 related service providers. That means that almost 50 percent of the individuals in the sample are special education teachers, 30 percent are resource specialist/teachers, and only approximately 20 percent are related service providers (and only a portion of those related service providers are speech therapists).

Given that special education teachers constitute the majority of the respondents for the special education student questionnaire, the probability of a student with speech/language impairment being selected was much smaller than the probability of selecting a student with mental retardation, because only 40 percent of students with speech/language impairment receive services from special education teachers, compared to 80 percent of students with mental retardation.

The same rationale applies to students with autism and students with hearing impairments. The population of autistic and hearing impaired students is roughly the same (59,240 and 55,042 respectively), but students with autism represent 6.4 percent of the sample, compared to 3.6 percent for students with hearing impairments. Looking at the way these students are served, 77 percent of students with autism receive services from a special education teacher, compared to less than 50 percent of hearing-impaired students. This suggests that students with autism are more likely to be in the sample than hearing impaired students, because they are more likely to be served by a special education teacher (who selects students from his or her class to be in the sample).

Because the sampling procedures were designed to obtain an adequate number of observations to produce reliable estimates for students with low-incidence disabilities, the distribution by disability category of the sample and the population are not the same. The

difference between the sample and the population is explained here to ensure the reader that in no way does this difference affect the analysis, as the purpose of this paper is to explore patterns of services and expenditures rather than incidence rates.

Appendix B1
Spending Ratios, Per Pupil Expenditures, Standard Errors, Population, and Sample Size, by Disability

Exhibit B1.
Spending Ratios, Per Pupil Expenditures, Standard Errors, Population, and Sample Size,[16] by Disability

Disability Category	Spending Ratio[17]	Total Per Pupil Expenditures Standard Error		Total Special Education Expenditures Standard Error		Population	Number of Students in Sample
		Mean	*Standard Error*	*Mean*	*Standard Error*		
Autism (AUT)	2.9	$18,790	$1,470	$15,219	$1,457	55,042	638
Emotional Disturbance (ED)	2.2	$14,147	$1,144	$9,885	$1,153	383,418	900
Hearing Impairment/Deafness (HI/D)	2.4	$15,992	$1,168	$11,006	$932	59,240	355
Mental Retardation (MR)	2.3	$15,040	$555	$11,393	$564	565,281	1,097
Multiple Disabilities (MD)	3.1	$20,095	$883	$16,098	$888	78,993	670
Orthopedic Impairment (OI)	2.3	$14,993	$814	$10,888	$784	66,110	260
Other Health Impairment (OHI)	2.0	$13,229	$739	$8,754	$801	238,975	943
Specific Learning Disability (SLD)	1.6	$10,558	$383	$5,507	$257	2,807,268	3,172
Speech/Language Impairment (SLI)	1.7	$10,958	$1,311	$6,334	$1,533	1,076,182	560
Traumatic Brain Injury (TBI)	2.5	$16,542	$1,541	$12,459	$1,476	12,073	159
Visual Impairment/Blindness (VI/B)	2.9	$18,811	$1,682	$13,796	$1,755	22,241	196
Preschool (PRE)	2.0	$13,426	$908	$10,013	$1,035	539,399	598
Students Placed in Non-public Schools (NPS)	3.9	$25,580	$2,390	$25,580	$2,240	229,392	316
Average Special Education Student	1.9	$12,525	$341	$8,126	$363	6,153,351	9,936

[16] It is not necessary for the sample proportions and the population proportions to be the same. The purpose of the SEEP sampling procedure was to obtain an adequate number of observations to produce reliable estimates, not to estimate prevalence, as prevalence information is available elsewhere. See Appendix A2 for a more detailed explanation.

[17] The spending ratio compares spending on a *special* education student with a particular disability with spending on the average *regular* education student.

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Appendix B2

Significance Levels (P-values) for Differences Among Disability Categories for Per Pupil Expenditures

Exhibit B2.
Significance Levels (P-values) for Differences in Per Pupil Expenditures, by Disability
(Differences Statistically Significant at the 5 Percent Level are Highlighted in Grey)

Disability Category	AUT	ED	HI/D	MR	MD	OI	OHI	SLD	SLI	TBI	VI/B	PRE	NPS
Autism	-	0.01	0.14	0.02	0.45	0.02	0.00	0.00	0.00	0.29	0.99	0.00	0.02
Emotional Disturbance	0.01	-	0.26	0.48	0.00	0.55	0.50	0.00	0.07	0.21	0.02	0.62	0.00
Hearing Impairment/ Deafness	0.14	0.26	-	0.46	0.01	0.48	0.05	0.00	0.00	0.78	0.17	0.08	0.00
Mental Retardation	0.02	0.48	0.46	-	0.00	0.96	0.05	0.00	0.00	0.36	0.03	0.13	0.00
Multiple Disabilities	0.45	0.00	0.01	0.00	-	0.00	0.00	0.00	0.00	0.05	0.50	0.00	0.03
Orthopedic Impairment	0.02	0.55	0.48	0.96	0.00	-	0.11	0.00	0.01	0.37	0.04	0.20	0.00
Other Health Impairment	0.00	0.50	0.05	0.05	0.00	0.11	-	0.00	0.13	0.05	0.00	0.87	0.00
Specific Learning Disability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	0.77	0.00	0.00	0.00	0.00
Speech/Language Impairment	0.00	0.07	0.00	0.00	0.00	0.01	0.13	0.77	-	0.01	0.00	0.12	0.00
Traumatic Brain Injury	0.29	0.21	0.78	0.36	0.05	0.37	0.05	0.00	0.01	-	0.32	0.08	0.00
Visual Impairment/ Blindness	0.99	0.02	0.17	0.03	0.50	0.04	0.00	0.00	0.00	0.32	-	0.00	0.02
Preschool	0.00	0.62	0.08	0.13	0.00	0.20	0.87	0.00	0.12	0.08	0.00	-	0.00
Students Placed in Non-public Schools	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.02	0.00	-

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Appendix C

Sample Size for Instructional and Related Services, by Disability

Exhibit C.
Sample Size for Expenditures for Instructional and Related Services, by Disability

Instructional and Related Services	Total	Autism	Emotional Disturbance	Hearing Impairment/ Deafness	Mental Retardation	Multiple Disabilities
Regular Education Classes	6,862	362	512	286	547	319
Special Education Classes	5,326	446	664	168	870	541
Resource Specialist	4,672	228	338	175	342	194
Related Services	5,124	505	394	289	553	512
School Psychologist	550	48	155	7	34	55
Social Worker	154	12	45	7	12	21
School Nurse	509	34	69	56	50	70
Speech/Language Specialist	3,721	461	119	238	465	393
Physical/Occupational Ther.	1,890	269	34	29	219	335
Audiologist	156	1	3	95	10	8
Vision Specialist	128	5	0	2	16	37
Other Therapist	1,636	190	183	69	217	271
Personal Health Aide	70	7	1	1	6	28
Community-Based Training	592	80	30	11	220	100
Extended Time Service	359	33	33	15	22	27
Summer School	1,601	254	111	65	253	246

Exhibit C.
Sample Size for Expenditures for Instructional and Related Services, by Disability (continued)

Instructional and Related Services	Orthopedic Impairment	Other Health Impairment	Specific Learning Disability	Speech/ Language Impairment	Traumatic Brain Injury	Visual Impairment/Blindness	Preschool Students
Regular Education Classes	191	791	2,796	511	100	131	273
Special Education Classes	129	383	1,332	127	85	109	426
Resource Specialist	126	592	2,200	149	95	87	119
Related Services	206	477	912	492	87	128	520
School Psychologist	13	57	127	8	7	14	21
Social Worker	3	13	24	0	10	2	4
School Nurse	14	47	85	11	8	33	27
Speech/Language Specialist	84	257	607	484	67	47	456
Physical/Occupational Ther.	174	223	137	53	48	47	297
Audiologist	1	4	13	1	1	0	14
Vision Specialist	3	5	4	0	2	29	20
Other Therapist	99	165	172	41	34	80	96
Personal Health Aide	6	3	0	0	1	1	15
Community-Based Training	10	29	58	2	11	16	18
Extended Time Service	10	52	113	10	8	11	21
Summer School	43	101	222	53	21	35	182

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